WHAT IS CLAIMED:

1. A dual cone fluid dynamic bearing (FDB) cartridge including a sleeve, first and second cones supported from the sleeve each of the cones having an apex and a flaring, diverging surface leading to a wider base having a substantially flat surface, the apexes of the cones being near to each other,

a hub defining a facing surface separated by a gap from the fluid surface of the first and second cones

fluid filling the gap to support relative rotation of the sleeve and the hub

and a centrifugal capillary seal mounted adjacent the base of each of the cones to prevent loss of the fluid from the cartridge.

2. A dual cone FDB as claimed in claim 1 including a fluid circulation path defined around each of the cones including a gap or path between the apexes of the cones, a fluid flow path defined between an interior surface of each of the cones and the sleeve and between the base of each of the cones and a surface of the centrifugal seal so that fluid is maintained in the fluid dynamic bearing.

3. A dual cone FDB as claimed in claim 2, the centrifugal capillary seals each comprising a seal cone supported on the sleeve and a shield plate supported on the hub facing surfaces of the seal cone and the shield plate forming an acute angle, relative rotation of said interior surfaces creating a meniscus across the fluid to maintain the fluid in the seal and in the gap of the FDB.

4. A duel cone FDB as claimed in claim 1 wherein the facing surface of the hub has grooves defined thereon to establish the fluid dynamic bearing.

5. A duel cone FDB as claimed in claim 4 wherein the surfaces of the cones wherein the fluid bearings are established are smooth.

6. A dual cone FDB as claimed in claim 5 further including a single grooved journal bearing adjacent, but axially spaced from the dual cone journal bearing.

7. A dual cone FDB as in claim 6 wherein the journal bearing comprises the hub including an inner cylindrical surface surrounding the outer surface of the sleeve, the hubs inner surface having grooves defined thereon to establish the FDB operating region.

8. A dual cone FDB as claimed in claim 7 further including a grooved pumping seal adjacent one of said pair of conical bearings and near to a first end of said sleeve, and a grooved pumping seal adjacent the dual cone pumping seal and a second end of the shaft.

9. A dual cone FDB as claimed in claim 8 wherein each of the grooved pumping seals includes a plurality of grooves defined on an outer surface of the cone.

10. A dual cone FDB as claimed in claim 9 wherein said grooved pumping seal

includes a plurality of grooves on a surface of the sleeve surrounding and rotating around the shaft.

11. A conical bearing for supporting relative rotation between the sleeve and a surrounding hub, the conical bearing including a conical element supported on the sleeve and having passages on a flat, base surface between an interior surface of the conical element and a facing surface of the sleeve, and a centrifugal capillary seal supported adjacent the base side of the cone and separated from the cone base by a counterplate supported on the sleeve.

12. A conical bearing as claimed in claim 11 wherein the cone has a fluid flow path around all sides of the cone including between the base of the cone and the counterplate and between the inner surface of the cone and the outer surface of the shaft.

13. A conical bearing as claimed in claim 12 wherein said counterplate includes an axial opening extending from a corner of the cone to an opening in the centrifugal capillary seal.

14. A conical bearing as claimed in claim 13 wherein the centrifugal capillary seal includes a shield extending radially from said sleeve and supported from said sleeve, said shield including an angled surface extending axially radially toward the shaft, said angled surface cooperating with a radial surface of said counterplate to define a

storage region for said centrifugal capillary seal.

15. A seal for supporting a shaft as claimed in claim 14 including a journal bearing on said shaft comprising a plurality of grooves formed in the sleeve and facing the shaft and fluid in the grooves to establish the journal bearing.

16. A conical bearing for supporting relative rotation between the sleeve and a surrounding hub, the conical bearing including a conical element supported on the sleeve and having passages on a flat, base surface between an interior surface of the conical element and a facing surface of the sleeve, and a centrifugal capillary seal supported adjacent the base side of the cone and separated from the cone base by a counterplate supported on the sleeve.

17. A cartridge comprising a shaft or sleeve supported for rotation relative to a sleeve by first and second fluid dynamic bearings located along the shaft, said first fluid bearing comprising a cone on said shaft having a bearing surface defined between a conical sides of said cone and a facing surface of the sleeve and further comprising a grooved pumping seal adjacent the cone and defined between a counterplate supported, and a journal bearing spaced along the shaft from the conical bearing and defined between the shaft and surrounding sleeve.